



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,907	04/24/2006	Kenneth Board	3081.23US01	6894
24113 7590 12/28/2007 PATTERSON, THUENTE, SKAAR & CHRISTENSEN, P.A. 4800 IDS CENTER 80 SOUTH 8TH STREET MINNEAPOLIS, MN 55402-2100			EXAMINER WALBERG, TERESA J	
			ART UNIT 3744	PAPER NUMBER
			MAIL DATE 12/28/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/517,907

Applicant(s)

BOARD ET AL.

Examiner

Teresa J. Walberg

Art Unit

3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-32 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 15-32 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/30/05</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 15-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Sanyo (JP 57-204754).

Sanyo discloses a heat pipe (see Figures and English language title) that would be capable of use in extracting heat from a semiconductor light source, the heat pipe including a transparent member (6 and 21 in Fig. 1) formed of a thermally conductive material and defining an optical transmission path therethrough, the heat pipe being capable of being located proximate to the active region of a semiconductor device to extract heat when in use, the optical transmission path is provided by means of a channel which runs through the heat pipe (Fig. 1), the channel being arranged to receive optical transmission means (Fig. 1), the transparent and translucent member comprises a hollow pipe with sealed ends (Fig. 1), the heat pipe being at least partially filled with a cooling liquid (Fig. 1).

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanyo (JP 57-204754) in view of Hamilton (5,852,339).

Sanyo discloses a transparent heat pipe as claimed, but it is unclear whether Sanyo teaches the use of a partial vacuum in the tube and a capillary material. Hamilton discloses the use of a partial vacuum (col. 5, lines 23-25) and a capillary material (col. 5, lines 40-43) in a heat pipe. It would have been obvious in view of Hamilton to use a partial vacuum and a capillary material in the heat pipe of Sanyo, the motivation being to obtain improved operation of the heat pipe.

5. Claims 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanyo (JP 57-204754) in view of Kurikhin (SU 1035400).

Sanyo discloses a transparent heat pipe as claimed, but does not appear to disclose optical fibers disposed in the channel. Kurikhin discloses the use of optical fibers disposed in the channel of a heat pipe. See the English language abstract. It would have been obvious in view of Kurikhin to use optical fibers in the channel of the heat pipe of Sanyo, the motivation being to obtain improved light transfer in the heat pipe.

6. Claims 26-28 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanyo (JP 57-204754) in view of Masami et al (4,729,076).

Sanyo discloses a transparent heat pipe as claimed, but does not appear to disclose the heat pipe being used in combination with a semiconductor light source. Masami et al disclose the use of a heat pipe in combination with a semiconductor light source. See the abstract. It would have been obvious in view of Masami et al to use the heat pipe of Sanyo in combination with a semiconductor light source, the motivation being to obtain improved cooling of the light source.

7. Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanyo (JP 57-204754) in view of Masami et al (4,729,076) and further in view of Kurikhin (SU 1035400).

Sanyo in view of Masami et al discloses a transparent heat pipe in combination with a semiconductor light source as claimed, but does not appear to disclose optical fibers disposed in the channel. Kurikhin discloses the use of optical fibers disposed in the channel of a heat pipe. See the English language abstract. It would have been obvious in view of Kurikhin to use optical fibers in the channel of the heat pipe of Sanyo in view of Masami et al, the motivation being to obtain improved light transfer in the heat pipe.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claim 31 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 31 is inconsistent with claim 15, from which it depends. It has been assumed for purposes of this office action that claim 31 was intended to depend from claim 28.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Diamond Denki (JP 2000-353892), Eastman, Itoh, and Logan et al are cited to show relevant cooling structures.


11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Teresa J. Walberg whose telephone number is 571-272-4790. The examiner can normally be reached on M-F 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Application/Control Number:
10/517,907
Art Unit: 3744

Page 6

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Teresa J. Walberg
Primary Examiner
Art Unit 3744

/tw/